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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/544,210

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EXAMINER

ARCIERO, ADAM A

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/544,210	<b>Applicant(s)</b> TAKAHASHI ET AL.	
	<b>Examiner</b> ADAM A. ARCIERO	<b>Art Unit</b> 1727	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19,21,23-25 and 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19,21,23-25 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 1727

**NONAQUEOUS ELECTROLYTE SECONDARY BATTERY**

Examiner: Adam Arciero

Art Unit 1727

S.N. 10/544,210

March 9, 2011

**DETAILED ACTION**

1. The Applicant's response filed on December 27, 2010 was received. Claims 19, 21 and 23-31 are currently pending. Claims 26-30 remain withdrawn from consideration. Claim 31 is newly added. Claim 19 has been amended.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Drawings**

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the features of newly added claim 31 as described in the specification. The specification states in paragraph [0085] "as can be seen from FIG. 4, a major portion (at least 80%) of the lithium cobaltate particle surface is exposed." However, Figure 4 is just a black picture without any details or depiction of what was stated above. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be

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labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### **Claim Rejections - 35 USC § 102**

4. The claim rejections under 35 U.S.C. 102(b) as being unpatentable over Yamazaki on claims 19, 21 and 23 are maintained.

As to Claim 19, Yamazaki discloses a nonaqueous battery comprising both positive and negative electrodes and an electrolyte, and further wherein said positive electrode comprises a lithium transition metal compound for use as a positive active material in a rechargeable battery comprising the formula  $\text{Li}_x\text{Co}_{1-y-z}\text{Zr}_y\text{Me}_z\text{O}_{2-a}$  wherein Me can be Mg and  $1 < x < 1.2$ ,  $0 < y \leq 0.01$ ,  $0 \leq z < 0.1$ , and  $-0.1 \leq a \leq 0.1$  (Abstract). Yamazaki further discloses a similar method of making the positive active material, which comprises mixing the raw materials and heat treating said mixture over a predetermined time period (paragraph [0053]) and wherein said active material is a layered structure (paragraph [0050]). Yamazaki further discloses wherein the end-of-charge voltage can be set to 4.3V (paragraph [0054]). Examiner is reading “Zr compound” as reading

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on "Zr-containing compound" which includes the lithium cobaltate particles containing Zr.

Therefore, Yamazaki discloses wherein Zr-containing compound particles are adhered to the surface of the lithium cobaltate and Mg is contained in both particles.

As to Claim 21, Yamazaki discloses the ranges of Zr and Mg as overlapping each other. Mg is preferred to be contained in an amount of 0 to 0.05 (paragraph [0016]) and Zr is preferred to be contained in an amount of 0.001 to 0.05 (paragraph [0015]). Therefore, Yamazaki teaches that both Zr and Mg can be contained in equimolar amounts.

As to Claim 23, Yamazaki discloses wherein the negative electrode material is carbon (paragraph [0042]) and further that an end-of-charge voltage of 4.4V can be realized (paragraph [0055]). Yamazaki does not specifically disclose wherein when the end-of-charge voltage is 4.4V, a ratio in charge capacity of the negative electrode to the positive electrode is 1.0-1.2. However, it is the position of the Examiner that such properties of the active materials are inherent, given that the materials and method for producing (sintering and mixing) disclosed by Yamazaki and the present application are the same. A reference which is silent about a claimed invention's features is inherently anticipatory of the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

As to Claim 31, Yamazaki discloses wherein the lithium cobaltate particles containing Zr are adhered to each other, when forming the positive active material layer (Abstract). Therefore, the outermost particles have at least 80% of the surface exposed without being covered by a Zr-containing compound particle.

**Claim Rejections - 35 USC § 103**

5. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Yamazaki and Tanaka on claim 24 is maintained.

As to Claim 24, Yamazaki does not specifically disclose wherein the electrolyte contains a cyclic carbonate, and a chain carbonate as a solvent, and the cyclic carbonate content of the solvent is 10-30% by volume.

However, Tanaka teaches of a nonaqueous electrolyte secondary battery (Title) wherein the electrolyte comprises a solvent mixture of ethylene carbonate (EC) and diethyl carbonate (DEC), wherein the cyclic carbonate (EC) is present in 25% of the volume of the total solvent mixture (pg. 6, Table 11, battery No. 073). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the electrolyte solution of Yamazaki so as to comprise ethylene carbonate in a volume content of 25% of the total volume of the solvents, because Tanaka teaches that the safety of the batteries can be enhanced with proper choice of the electrolytic solution.

6. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Yamazaki and Hironaka et al. on claim 25 is maintained.

As to Claim 25, Yamazaki does not specifically disclose wherein the positive electrode comprises a carbon material in the amount of less than 5 wt%.

However, Hironaka et al. teaches of a nonaqueous electrolyte secondary battery having a positive electrode with a positive active material. Said electrode further comprises a carbon material, a binder and a conductor, wherein the carbon material does not exceed 2 wt% of the

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total positive electrode materials (pg. 5, Table 3). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the electrode of Yamazaki so as to comprise a carbon material of less than 5 wt % of the total electrode materials, because Hironaka et al. teaches that the cycle life and power characteristics of the battery can be improved.

### **Response to Arguments**

7. Applicant's arguments with respect to claim 19 has been considered but are not persuasive.

*Applicant's principle arguments are:*

a) The rejection is not proper because Yamazaki specifically teaches that  $\text{ZrO}_2$  and  $\text{Li}_2\text{ZrO}_3$  do not remain in the form separated with the lithium cobalt system (claim 19).

In response to Applicant's arguments, please consider the following comments:

a) The term "Zr compound" can be read as "Zr-containing compound" which includes the positive active material lithium cobaltate particles containing Zr adhered to the surface of each other (the lithium particles containing Zr). Therefore, Yamazaki discloses wherein Zr-containing compound particles are adhered to the surface of the lithium cobaltate and Mg is contained in both particles. Furthermore, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e.,  $\text{ZrO}_2$  and  $\text{Li}_2\text{ZrO}_3$  particles adhered to the surface of the lithium cobaltate) are not recited in the rejected claim(s). Although the claims are interpreted in light of

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the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).\

### **Conclusion**

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM A. ARCIERO whose telephone number is (571)270-5116. The examiner can normally be reached on Monday to Friday 7am to 4pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Adam A Arciero/  
Examiner, Art Unit 1727

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 1727